OVN Performance

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- ovn-controller’s performance is much more important than ovn-northd.
- The lowest-hanging fruit has been picked.
- Performance results are highly situational.
- Honing the code that runs is not as important as insuring code does not run needlessly
Major Improvements made this past year
• Big thanks to Han Zhou for this improvement
• Rather than processing everything always, only process what has changed.
• Depending on workload, can result in 95% reduction in CPU usage.
● Conjunctive matches were disabled in ovn-controller due to a bug.
● Without conjunctive matches, heavy use of ACLs could cripple ovn-controller’s run time
● Reintroduction actually introduced improvement over original use of conjunctive matches (but not by much).
Current performance issues
● Full recomputes are required sometimes
  ○ Database disconnection/reconnection
  ○ OpenFlow messages still in flight
  ○ Certain data is not built into the incremental engine
● The code is complicated.
● ovn-controller can get stuck in an infinite recompute loop
● Some workloads aren’t conducive to incremental processing in its current form.
● Coarse-grained locking used.
● ovn-controller main loop can potentially block packet processing
● Potentially the same in reverse: packet processing can block main loop operations


- ovn-controller can be very slow during full recomputes
  - Expression parsing of logical flows
  - Generation of large number of OpenFlow flows
- Algorithms do not have super obvious methods for improvement
Planned improvements
● Make incremental processing work for more data types
● Reduce situations where full recompute is necessary
● Reduce contention between ovn-controller main thread and pinctrl thread.
● Make algorithmic improvements to ovn-controller.
● Conversion to differential datalog
Thank you

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